

Claims:

1. Method for using at least two refining stages formed of a independent refiners or combined refining zones in a single refiner, for producing fibers from wood chips, comprising at least steps of

- feeding at least wood chips and water into a first refining (3) stage,
- using the first refining (3) stage for defibrating the chips to fibers,
- removing a flow of steam and fibers from the first refining (3) stage,
- feeding the flow of refined fibers and steam into a second refining (7) stage, and
- removing the flow of fibers and steam from the following refiner (7)

characterized of

- feeding the flow of mixture of fibers that are refined and steam forward at least in the first refining (3) stage by rotary energy of a rotor of the refiner so that no essential back-flow of the steam occurs,
- transferring the fiber and steam mixture exiting the first refiner totally into the second refiner without separating steam from the flow, and
- feeding the mixture through a flow path having a cross section that is constant or decreasing between at least the exit of the first refining (3) stage and infeed of the second refining stage.

2. Method according to the claim 1, **characterized** in that the steam fed into the first refiner and formed therein forms the transport medium of the mass that is refined.

3. Method according to the claim 1 or 2 **characterized** in that the residence time of the fibers in the process is less than 50% of the comparable processes using cyclone between refiner stages.

4. Method according to one of the preceding claims, **characterized** of separating steam from the fibers after second refiner (7) and feeding at least part of that steam back to the first refiner (3).

5. Method according to one of the preceding claims 1-3, **characterized** in that the pressure from the previous stage housing to the following stage can be freely chosen to improve the fiber properties.

6. Method according to one of the preceding claims 1 - 3, **characterized** of separating steam from the fibers after second refiner (7) and feeding that steam back to the first refiner (3).

7. Method according to any of the preceding claims, **characterized** of keeping the medium velocity of the mass flow constant or preferably accelerating between at least the exit of the first refiner (3) and infeed of the second refiner.

8. Method according to any of the preceding claims, **characterized** in that steam is separated only once from the process.

9. Apparatus for producing fiber mass from wood chips, comprising:

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- at least two refining stages formed by separate refiners or refining stages in a single refiner,
- means (4) for feeding wood chips into the first refining (3) stage, and
- means for transferring the mass exiting the first refining (3) stage into the second refining stage (7),

characterized in that the cross section of the flow path between at least the exit of the first refining (3) stage and infeed of the second refining stage is constant or preferably decreasing.

10. Apparatus according to the claim 9, **characterized** of a cyclone (10) for separating steam from mass flow exiting the second refiner.

11. Apparatus according to the claim 10, **characterized** of a return stem line (12) for feeding at least some of the steam separated from the mass flow into the first refiner (3).

12. Apparatus according to the claim 9, **characterized** in that the refining stages are formed by two separate refiners.

13. Apparatus according to the claim 9, **characterized** in that the refining stages are formed by a single two-staged refiner.

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